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Underground parts are protected not only by the sheet of soil, but also by the blanket of snow. It was said in the last section (2b) that the trees are restricted to the river-valleys, and that they grow in the valley just up to the plains level and no higher; this was explained as due to the moisture of the valleys and their protection from the drying winds of the plains. Essentially the same condition obtains in winter when such valleys become filled to the brim with snow and the trees are thus protected from the winds which desiccate by freezing. On the exposed plain, on the other hand, where many spots are swept bare of the protecting snow, there are no trees, the vegetation dying almost completely down to the ground every winter. This is one of many facts which sharply distinguish the plains proper from the valleys by which they are intersected. This same fact of all but universal retirement underground to pass the winter distinguishes the plains vegetation from that of the comparatively mild-wintered Eastern States, where many green stems and green leaves may be found even in January. On the plains of North Dakota, the winter sleep is a very deep sleep.

(Conclusion in BULLETIN for July.)

THE HIGHEST POINTS IN STATES IN THE UNITED STATES.

BY

N. H. DARTON,
U. S. Geological Survey.

The question often arises, which is the highest point in the State and what is its altitude? For some of the States, reference to the geographies, atlases, encyclopedias, and State reports will answer the question accurately, but for others there is great diversity of opinion as to the highest peak or locality. Figures of altitudes differ widely, and in some cases no data are recorded. The Gannett Dictionary of Altitudes, published by the U. S. Geological Survey, gives figures for many of the highest peaks, but does not provide for all parts of all the States. Most of the high mountains have been measured by either the U. S. Geological Survey or the U. S. Coast and Geodetic Survey, and so far as the facts have been recorded they should be utilized in correcting the discrepancies in the atlases

and other books in the hands of the public. The figures given in the following statements are from U. S. Geological Survey determinations, unless otherwise stated.

For many years the highest peak in the United States was supposed to be Mt. St. Elias in Alaska, which reaches 18,024 feet above sea-level, but in 1896 a prospector named Dickey discovered Mt. McKinley, an Alaskan peak which is 20,464 feet high. The first in height south of Alaska is Mt. Whitney, in the Sierra Nevada in California, which has an altitude of 14,502 feet. Mt. Williamson, near by, is a close second at 14,500 feet. The lowest point in the



MOUNT MCKINLEY, ALASKA.

United States is also in California, only 75 miles from the foot of Mt. Whitney. It is in Death Valley and, according to recent leveling, is within a foot or two of 276 feet below sea-level. When the water in Salton Sink evaporates again, it will reveal a still lower depression, or 287 feet below sea-level.

In the Atlantic States the highest peak is in North Carolina, though many people believe that it is included in the mountainous region in the north. It is well-known that the highest summit in New England is Mt. Washington in the White Mountains in New Hampshire, and it is, in fact, the highest point north of North Carolina and east of the Missouri. Its altitude is 6,290 feet and the neigh-

bouring summit of Mt. Adams, next in height, is 5,805 feet. Maine claims the next highest in Mt. Katahdin. Various figures, from 4,700 to 5,385 feet, have been assigned to this mountain, but a determination in 1906 fixes the elevation of its west peak at 5,268 feet and that of the east peak at 5,250 feet. Mount Mansfield is Vermont's highest peak and rises close to 4,406 feet above sea-level according to the U. S. Coast and Geodetic Survey. This figure, determined in 1897, is the altitude of the "chin," or highest summit. Mount Graylock holds undisputed claim as the highest summit in Massachusetts. Many estimates of its height have been given, notably 3,535 feet, but its correct height is 3,505 feet. Bear Mountain in Salisbury in the northwest corner of Connecticut is the high-



MOUNT WHITNEY.

Highest point in the U. S. south of Alaska; the summit in the background, near the middle of picture is Mount Whitney; the cliffs on its east side are about 3,000 feet high.

est point in that State, with an altitude of 2,355 feet. The greater part of Rhode Island is only a few feet above the level of the sea, but Durfee Hill in Exeter reaches an altitude of 805 feet, and is the highest point in the State. New York possesses a number of high peaks in the Adirondacks. Of these the loftiest is Mt. Marcy, rising to 5,344 feet above sea-level. The Catskills appear very high when viewed from Hudson River, but the greatest elevation, Slide Mountain, has an altitude of only 4,204 feet.

New Jersey has no notably high mountains, for High Point on the Blue Ridge, in the northwest corner of the State, is the highest, with an elevation of only 1,809 feet according to the State Survey map. There appears to have been no definite idea as to the highest point in Pennsylvania until a few years ago, when the U. S. Geologi-

cal Survey made a topographic map of the southern portion of the Alleghany Front Range. It was then found that Blue Knob, an outlying peak 15 miles southeast of Creston, is the loftiest summit, reaching 3,136 feet. Delaware, which is generally regarded as all lowland, rises to altitudes of over 400 feet in its northern extremity, and two rounded summits, one a mile east of Brandywine and the other just south of Centerville, reach slightly over 440 feet.

The parapets of old Fort Reno, in the northern part of Tenley, form the highest points in the District of Columbia, having an altitude of 421 feet according to the maps of the U. S. Coast and Geodetic Survey. It is often stated that Eagle Rock, east of Deer Park, is the highest point in Maryland, but it is 240 feet lower than some high summits on Backbone Mountain, which reach an altitude of 3,400 feet a half-mile northeast of "Potomac Stone." The latter marks the southwest corner of the State, or, rather, that of the narrow disputed strip lying between West Virginia and Maryland. If this strip is included in West Virginia, the highest point in Maryland will be a 3,340-foot peak a mile northeast of the 3,400-foot one. Mount Rogers, fittingly named for the first State Geologist, is the highest point in Virginia. It is a summit in the Blue Ridge in Grayson County, and attains an altitude of 5,719 feet. In West Virginia, Spruce Knob, an outlier from the Alleghany Front, in the western portion of Pendleton County, reaches an altitude of 4,860 feet. Kentucky's highest summit is on the Virginia boundary line in the eastern part of Harlan County, where a lofty promontory, known as "The Double," reaches an altitude slightly over 4,100 feet. It is on a branch ridge of the Cumberland Mountains.

The loftiest mountains east of the Black Hills and the Rockies are in the Black Mountain Range in western North Carolina, of which the highest peak is Mt. Mitchell, 6,711 feet. Black Brother, 6,690 feet, and Hairy Bear, 6,681 feet, are next to Mt. Mitchell in order of height. Mt. Guyot, 6,636 feet, and Clingman's Dome, 6,619 feet, on the Tennessee State line, are sometimes erroneously given as the highest peaks in North Carolina. They are, however, the highest peaks in Tennessee. The greatest height in South Carolina is attained by one of the Blue Ridge summits known as Sassafras Mountain, altitude 3,548, on the North Carolina State line. The altitude of 3,569 feet, attributed by some authorities to "Rich Mountain No. 1," appears to be a mistake. There is much conflict as to the most elevated point in Georgia. It proves to be Brasstown Bald, sometimes called Mt. Enota, on a spur of the Blue Ridge, or main divide, in Towns County. Its altitude is 4,768 feet.

One eminent authority gives "Sitting Bull Mountain, the middle summit of Nantehela Range, Towns County, altitude 5,046 feet," as the highest in Georgia, but no such mountain is known and the Nantehela Range is in North Carolina.

The culminating point in Alabama is a summit of the Blue Ridge known as Che-aw-ha Mountain, in the northwestern corner of Clay County. Its altitude is 2,407 feet.

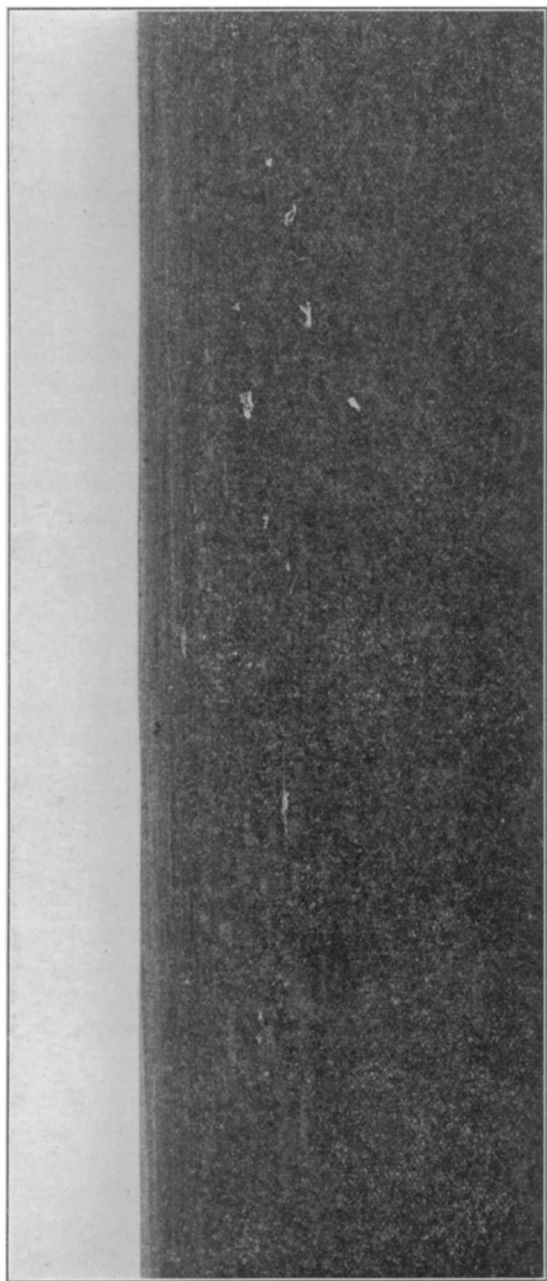
Very few of the Central States have been surveyed sufficiently to ascertain the precise altitude of their highest points. The greatest elevation in Ohio, approximately 1,540 feet above sea-level, according to the U. S. Weather Bureau, is a hill on Hogue's farm, one and a half miles east of Bellefontaine in Logan County. Indiana's highest locality is in the vicinity of the "summit" in Randolph County at about 1,285 feet above the sea. Illinois culminates in Charles Mound on the Wisconsin line in Jo Daviess County. According to C. W. Rolfe, its altitude is 1,257 feet. Porcupine Mountain, on the northern peninsula, appears to be the highest point in Michigan, with an altitude of 2,023 feet according to the U. S. Lake Survey. It is claimed that Huron Mountains in Marquette County are higher, but no data are available. A point about 2,230 feet above sea-level is believed by the Minnesota State Survey to be the highest land in that State. It is one of the summits of the Misquah Hills in Cook County. The highest determined elevation in Wisconsin is Rib Hill in Marathon County which has an altitude of 1,940 or 1,942 feet.

Returning to the Gulf Coast Region, very few persons realize that Florida reaches an elevation of over 250 feet in several sections in the northwestern part of the State. The highest land is in Walton County about 50 miles northeast of Pensacola, and probably on or near the Alabama State line it rises to more than 300 feet above sea-level. The exact location of its highest point has not been ascertained. Louisiana has several hills slightly over 400 feet in altitude, but which is the highest has not yet been determined. The distinction now lies between Kisatchie Hills in Sabine Parish, some hills in the southeast corner of Claiborne Parish, and some ridges in Vernon Parish. These are all in the western part of the State. The highest lands in Mississippi are on the wide divide between Mississippi and Tennessee rivers, in the northern counties. The village of Holly Spring in Marshall County, 602 feet above sea-level, is approximately the highest point. Arkansas has two peaks which are rivals, for both are practically the same height, 2,800 feet. One is Magazine Mountain in Logan County and the other is

a peak on Fourche Mountain on the south central boundary of Scott County. The first is not very accurately measured.

Taum Sauk Mountain, one of the peaks of the St. Francis Range, is the highest summit in Missouri. According to the State Geological Survey map its altitude is slightly over 1,800 feet. It is 6 miles southwest of Ironton. The very conspicuous Ocheyedan Mound, in east central Osceola County, is usually supposed to be the highest point in Iowa, but a small marsh on the rolling plains 5 miles northeast of Sibley is believed by the State Geological Survey to be slightly higher. Its altitude is estimated at 1,670 feet. The town of Waneta, which has been mentioned as the highest place, is only 1,562 feet above sea-level. The highest point in Oklahoma lies on or near its western border in the high plains south of Cimarron River. The precise locality has not been ascertained; probably it is near the southwest corner of Township 1, Range 1, and is somewhat over 4,700 feet. A high ridge north of Kenton also rises to slightly over 4,700 feet. Guadalupe Peak has long been recognized as the highest summit in Texas but its precise height is not known. According to some maps it is 9,500 feet, but a recent aneroid measurement indicates considerably less, probably not quite 9,000 feet. Rand and McNally's Atlas gives 8,382 feet on authority not stated. Mt. Emory, in Chisos Mountains, formerly given as 9,000 feet high, proves to be 7,835 feet.

The great plains of western Kansas slope gradually upward from east to west and the highest altitude is attained at the Colorado State boundary on the divide between Smoky Hill and Arkansas rivers, but the precise spot has not been located. As shown by the photograph, the region is so smooth that without instrumental survey it would be impossible to detect the highest point. On maps of the U. S. Geological Survey the greatest elevation is at or near the intersection of the State line by the Greeley-Wallace county line where the height is approximately 4,135 feet above sea-level. There is great diversity of opinion as to the highest summit in Nebraska. Three points are variously credited with the honor. Scott's Bluff, usually given, with altitude 5,000 to 6,000 feet, is only 4,662 feet, Sioux Summit, on Pine Ridge, elevation 4,889 feet, is exceeded by high buttes further north, while Wildcat Mountain, given by some authorities, is 5,038 feet, or somewhat less than the neighbouring summit, Hogback Mountain. In reality, the highest land in the State is not a conspicuous butte or hill but is an undetermined point on the smooth high plains in the western portion of Kimball County in the southwestern corner of the State. I have found that



THE GREAT PLAINS IN THE HIGHEST PART OF KANSAS.
Slightly over 4,120 feet in altitude.

the plains in that vicinity reach as high as 5,300 feet along the Wyoming boundary line. Harney Peak, the culminating point in South Dakota, is in the Black Hills and reaches an altitude of 7,216 feet. It is erroneously given by various authorities from 7,000 to 8,700 feet. Another error occurs in connection with North Dakota. According to printed authorities, Sentinel Butte, west of Medora, is the highest determined summit in the State. It is, however, only slightly over 3,100 feet above sea-level, and I have found higher buttes than this on the divide east of Little Missouri River in the southern part of Bowman County. Doubtless some of these reach an altitude of 3,500 feet and more.

In the Rocky Mountain region, the highest peak is Mt. Massive, in Colorado, which attains an elevation of 14,424 feet. Blanca Peak, which is often given as the highest point in the State, is only 14,390 feet, and Pike's Peak, so familiar to the tourist, is 14,107 feet, according to precise determination in 1907. In the southern extension of the Rocky Mountains in New Mexico, there are several very high summits. The highest is the more northern of the Truchas Peaks, 25 miles northeast of Santa Fé, which has an altitude of 13,306 feet. The southern peak is 13,275 feet. Cerro Blanco, on the crest of the White Mountain Range in the south-central part of the Territory, is stated in some reports to be the highest peak, but its altitude is only 11,892 feet, according to the Wheeler Survey. In Wyoming, Frémont Peak, in the Wind River Mountains, has long had the reputaton of being the highest in the State, with altitude of 13,790 feet. It was the one ascended by General Frémont on his famous expedition. In 1906 a survey of the region by the U. S. Geological Survey resulted in finding that the summit is only 13,720 feet high, or 27 feet lower than Grand Teton, while another peak, a short distance north of Frémont Peak, is 13,775 feet, and therefore the highest summit in the State. The name Gannett has been proposed for it.

Many of the high mountains of the northern extension of the Rocky Mountans attain an altitude between 11,000 and 12,000 feet in Montana, and the highest of them, known as Granite Peak, rises to approximately 12,834 feet. It is west of the town of Red Lodge, and 15 miles northeast of the northeastern corner of Yellowstone Park. The altitude was determined by a special survey made for the Red Lodge Coal Company. Mount Powell, in Deer Lodge County, given by some authorities as the highest peak, with altitude of 12,000 feet, is only 10,145 feet high. Hyndman Peak appears to be the highest summit in Idaho, with altitude of 12,078 feet.

It is in the centre of the southern half of the State, 18 miles north-east of Hailey.

The highest mountains in Utah are in the Uinta Range in the northeastern portion of the State. The peak supposed to be highest was named after the prominent geologist, G. K. Gilbert. Its altitude was given as 13,687 feet. A recent survey has shown that Gilbert Peak is only 13,422 feet and Mt. Emmons, 13,428 feet, is slightly higher. San Francisco Mountain is the highest point in Arizona. It is the summit of a great mass of volcanic rock, near the Grand Cañon, and attains a height of 12,794 feet. Rising prominently above the great deserts of Nevada, Wheeler Peak, in the eastern part of that State, attains an altitude of 13,058 feet, according to the U. S. Coast and Geodetic Survey. It is much higher than any other summit. It is sometimes known locally as Jeff Davis Peak, which is not the correct name.

California, as has already been stated, contains Mt. Whitney, the highest point in the United States, as well as Death Valley and Salton Sink, the lowest points. Mt. Rainier, also known as Mt. Tacoma, with an altitude of 14,363 feet, is the highest peak in the Northwest. Many erroneous figures are ascribed to it, 14,526 being the one most generally given. Mt. Hood is by far the highest summit in Oregon. Its height is 11,225 feet, according to precise measurements made by the U. S. Geological Survey last Summer.

AN ALLUVIAL FAN, NEAR FIELD, IN BRITISH COLUMBIA.

BY

FRED. H. LAHEE.

About four miles northwest of the town of Field, in British Columbia, and separated from it by Mount Burgess, lies the beautiful sheet of water known as Emerald Lake. Situated near the head of a broad glacial valley, this lake has been formed probably by the damming of the original channel by a heap of glacial débris, perhaps supported by a resistant, outstanding ledge of bedrock at this place. Across this barrier, the water flows out southwards.

The present interest, however, lies not so much in the lake and its mode of formation as in the fact that it is slowly being filled in at its northern end by a large alluvial fan, or, better, as will presently be explained, by a *double* alluvial fan.